

**Marking Scheme**  
**Strictly Confidential**  
**(For Internal and Restricted use only)**  
**Secondary School Examination, 2025**  
**SUBJECT NAME DATA SCIENCE (Q.P. CODE 106)**

**General Instructions: -**

<b>1</b>	You are aware that evaluation is the most important process in the actual and correct assessment of the candidates. A small mistake in evaluation may lead to serious problems which may affect the future of the candidates, education system and teaching profession. To avoid mistakes, it is requested that before starting evaluation, you must read and understand the spot evaluation guidelines carefully.
<b>2</b>	<b>“Evaluation policy is a confidential policy as it is related to the confidentiality of the examinations conducted, Evaluation done and several other aspects. Its’ leakage to public in any manner could lead to derailment of the examination system and affect the life and future of millions of candidates. Sharing this policy/document to anyone, publishing in any magazine and printing in News Paper/Website etc. may invite action under various rules of the Board and IPC.”</b>
<b>3</b>	Evaluation is to be done as per instructions provided in the Marking Scheme. It should not be done according to one’s own interpretation or any other consideration. Marking Scheme should be strictly adhered to and religiously followed. <b>However, while evaluating, answers which are based on latest information or knowledge and/or are innovative, they may be assessed for their correctness otherwise and due marks be awarded to them. In class-XII, while evaluating two competency-based questions, please try to understand given answer and even if reply is not from marking scheme but correct competency is enumerated by the candidate, due marks should be awarded.</b>
<b>4</b>	The Marking Scheme carries only suggested value points for the answers. These are in the nature of Guidelines only and do not constitute the complete answer. The students can have their own expression and if the expression is correct, the due marks should be awarded accordingly.
<b>5</b>	The Head-Examiner must go through the first five answer books evaluated by each evaluator on the first day, to ensure that evaluation has been carried out as per the instructions given in the Marking Scheme. If there is any variation, the same should be zero after deliberation and discussion. The remaining answer books meant for evaluation shall be given only after ensuring that there is no significant variation in the marking of individual evaluators.
<b>6</b>	Evaluators will mark( ✓ ) wherever answer is correct. For wrong answer CROSS ‘X” be marked. Evaluators will not put right (✓) while evaluating which gives an impression that answer is correct and no marks are awarded. <b>This is most common mistake which evaluators are committing.</b>
<b>7</b>	If a question has parts, please award marks on the right-hand side for each part. Marks awarded for different parts of the question should then be totaled up and written in the left-hand margin and encircled. This may be followed strictly.
<b>8</b>	If a question does not have any parts, marks must be awarded in the left-hand margin and encircled. This may also be followed strictly.

9	If a student has attempted an extra question, answer of the question deserving more marks should be retained and the other answer scored out with a note “ <b>Extra Question</b> ”.
10	No marks to be deducted for the cumulative effect of an error. It should be penalized only once.
11	A full scale of marks _____(example 0 to 80/70/60/50/40/30 marks as given in Question Paper) has to be used. Please do not hesitate to award full marks if the answer deserves it.
12	Every examiner has to necessarily do evaluation work for full working hours i.e., 8 hours every day and evaluate 20 answer books per day in main subjects and 25 answer books per day in other subjects (Details are given in Spot Guidelines). This is in view of the reduced syllabus and number of questions in question paper.
13	<p>Ensure that you do not make the following common types of errors committed by the Examiner in the past:-</p> <ul style="list-style-type: none"> <li>• Leaving answer or part thereof unassessed in an answer book.</li> <li>• Giving more marks for an answer than assigned to it.</li> <li>• Wrong totaling of marks awarded on an answer.</li> <li>• Wrong transfer of marks from the inside pages of the answer book to the title page.</li> <li>• Wrong question wise totaling on the title page.</li> <li>• Wrong totaling of marks of the two columns on the title page.</li> <li>• Wrong grand total.</li> <li>• Marks in words and figures not tallying/not same.</li> <li>• Wrong transfer of marks from the answer book to online award list.</li> <li>• Answers marked as correct, but marks not awarded. (Ensure that the right tick mark is correctly and clearly indicated. It should merely be a line. Same is with the X for incorrect answer.)</li> <li>• Half or a part of answer marked correct and the rest as wrong, but no marks awarded.</li> </ul>
14	While evaluating the answer books if the answer is found to be totally incorrect, it should be marked as cross (X) and awarded zero (0) Marks.
15	Any unassessed portion, non-carrying over of marks to the title page, or totaling error detected by the candidate shall damage the prestige of all the personnel engaged in the evaluation work as also of the Board. Hence, in order to uphold the prestige of all concerned, it is again reiterated that the instructions be followed meticulously and judiciously.
16	The Examiners should acquaint themselves with the guidelines given in the “ <b>Guidelines for Spot Evaluation</b> ” before starting the actual evaluation.
17	Every Examiner shall also ensure that all the answers are evaluated, marks carried over to the title page, correctly totaled and written in figures and words.
18	The candidates are entitled to obtain photocopy of the Answer Book on request on payment of the prescribed processing fee. All Examiners/Additional Head Examiners/Head Examiners are once again reminded that they must ensure that evaluation is carried out strictly as per value points for each answer as given in the Marking Scheme.

## MARKING SCHEME

### DATA SCIENCE

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#### SECTION A

#### (Objective Type Questions)

(24 Marks)

1. Answer any 4 out of the given 6 questions on Employability Skills. 4×1=4
  - (i) (A) The receiver transmits the message through one medium or another. 1
  - (ii) (C) becoming self-aware, self-monitoring and self-correcting 1
  - (iii) (B) Self-motivation 1
  - (iv) (A) Viruses 1
  - (v) (D) Entrepreneurship 1
  - (vi) (A) Sustainable development 1
  
2. Answer any 5 out of the given 6 questions. 5×1=5
  - (i) (B) Sorted 1
  - (ii) (A) A method which shows the probable values for a variable and how often they occur. 1
  - (iii) (C) Observer Bias 1
  - (iv) (B) Data merging 1
  - (v) (A) Privacy 1
  - (vi) False 1

- 3.** Answer any **5** out of the given **6** questions. **5×1=5**
- |       |     |  |   |
|-------|-----|--|---|
| (i)   | (B) | top, left  | 1 |
| (ii)  | (D) | Four   | 1 |
| (iii) | (A) | Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A). | 1 |
| (iv)  | (B) | Z-Score  | 1 |
| (v)   | (C) | Primary  | 1 |
| (vi)  | (B) | with Confidentiality   | 1 |
- 4.** Answer any **5** out of the given **6** questions. **5×1=5**
- |       |     |   |   |
|-------|-----|---|---|
| (i)   |     | The division of a small set of data from a large set of data is known as a subset | 1 |
| (ii)  | (A) | Probabilities   | 1 |
| (iii) | (B) | Central Limit Theorem   | 1 |
| (iv)  | (A) | Positive, Negative  | 1 |
| (v)   | (C) | Interquartile range   | 1 |
| (vi)  |     | False   | 1 |
- 5.** Answer any **5** out of the given **6** questions. **5×1=5**
- |       |     |                    |   |
|-------|-----|--------------------|---|
| (i)   |     | True               | 1 |
| (ii)  | (D) | Continuous         | 1 |
| (iii) | (B) | Probability        | 1 |
| (iv)  | (A) | Standard Deviation | 1 |
| (v)   | (B) | Percentile         | 1 |
| (vi)  | (C) | Discard            | 1 |

**SECTION B**  
**(Subjective Type Questions)**

**(26 Marks)**

Answer any **3** out of the given **5** questions based on Employability Skills in  
20 – 30 words each.

3×2=6

6. Interpersonal Communication: This form of communication takes place between two individuals and is thus one-to-one conversation, It can be formal or informal.

Examples

- (i) A manager discussing performance with an employee
- (ii) Two friends discussing homework
- (iii) Two people talking to each other over phone or video call

2  
(1 mark for  
correct  
definition 1  
mark for  
correct  
example)

7. Stress management techniques :

- Time management
- Physical exercise and fresh air
- Healthy diet
- Positivity
- Organizing academic life and no delaying
- Proper Sleep

(Any four)

2  
( $\frac{1}{2}$  mark for  
each correct  
technique)

8. Antivirus monitors the data coming in and out of a computer and prevents viruses from entering. Anti-virus can also detect and clean viruses that may have entered a computer.

2  
(2 mark for  
correct  
answer)

9. Myth

The money used to start a business is called capital. Capital is important for starting a business. However every business does not need a lot of capital to start. Depending on how much money you have or can borrow, you can start a business with that much money. Once you make more money, you can put into your business to make it bigger.

2  
(1 mark for  
mentioning  
myth or fact  
  
1 mark for  
justification)

- 10.** Problems related to sustainable development are: 2
- Food : The amount of rich, fertile land needed to grow crops, such as wheat, rice, etc. is becoming less as the are also getting depleted and lots of chemicals are spoiling the soil due to use of chemical fertilizers. *(1 mark for each correct problem and its explanation)*
  - Water : We use fresh water from rivers and ponds for drinking and cleaning but dump garbage into them. The rivers and ponds are getting polluted. This way, after several years, we will not have any clean water to drink.
  - Fuel : We are using a lot of wood from trees as fuels and for construction of homes and furniture. As more and more trees are being cut, it is affecting the climate of the place. Extreme weather conditions, such as floods, extreme cold or heat, are seen in many places, which affect the people living there.

(Any two)

*Answer any 4 out of the given 6 questions in 20 – 30 words each.* 4×2=8

- 11.** The Standard Deviation is a measure of how spread out the numbers are. To be specific, standard deviation represents how much the data is spread out around the mean or an average. For example, to find out if all points are close to the average or there are lost of points way above or below the average. 2  
*(1 mark for correct definition  
1 mark for correct example)*
- 12.** Discrete data is the data that takes only specified values. For example, if you give a test, you can either pass or fail. So, data is discrete in this case as it has only two specified outcomes. 2  
*(1 mark for correct definition  
1 mark for correct example)*
- 13.** Recall Bias is a type of measurement bias. It is common at the data labelling stage of any project. This type of bias occurs when we label similar type of data inconsistently, thus resulting in lower accuracy. 2  
*(1 mark for correct definition 1 mark for correct reason for occurrence)*
- 14.** Z-Score is very helpful to standardize the values of a normal distribution by converting them into z-score because : 2  
*(1 mark for each correct point)*

- (i) It gives us an opportunity to calculate the probability of a value occurring within a normal distribution.
- (ii) Z-score allows us to compare two values that are from the different samples.

15. One-to-many join is a type of joining technique in which one record of a table can be related to one or many records in another table. For example

One student can have multiple books issued by school library.

2  
(1 mark for correct explanation  
1 mark for correct example)  
2

16. In situations where you just have a single page or one file to discard, cutting the documents can be an appropriate method to discard the documents.

While cutting the documents, it should be cut into small pieces to ensure no sensitive information is readable.

(1 mark for each correct point)

Answer any 3 out of the given 5 questions in 50 – 80 words each.

3×4=12

17. In order to find standard deviation :

Step 1 : Calculate the mean by adding up all the data pieces and dividing it by the number of pieces of the data.

Step 2 : Subtract mean from every value.

Step 3 : Square each of the differences.

Step 4 : Find the average of squared numbers calculated in point number 3 to find the variance.

Step 5 : Lastly, find the square root of variance. That is the standard deviation.

4  
(1 mark each for first three steps)

$\frac{1}{2}$  mark  
each for last two steps)

18. Uniform distribution is one in which likelihood of occurrence of each event is same.

Probability Table for tossing two coins is as follows :

Outcome	Probability
Head-Head	0.25
Head-Tail	0.25
Tail Head	0.25
Tail-Tail	0.25
All Else	0

4  
(1 mark for correct definition)

3 marks for correct probability table)

19. (a) In Data Science, bias is a deviation from the expected outcome in the data. Fundamentally, bias can also be called as an error in data.
- (b) Bias basically occurs because of sampling and estimation.
- (c) Predictive models often consider only the data that is used for training. In fact, they know no other reality other than the data that is fed in their system. Naturally, if the data that is fed into the system is biased, model accuracy and fidelity are compromised. Biased models can also tend to discriminate against certain groups of people. Therefore, it is very important to eliminate the bias to avoid these risks.

4  
(1 mark  
each for  
parts a  
and b 2  
marks for  
part c)

20. Steps to calculate decile :

- (a) Find out the number of data or variables in the sample or population. This is denoted by n.
- (b) In the next step, sort all the data or variables in the sample population in ascending order.
- (c) In the next step, based on the decile that is required, calculate decile by using the formula :

$$D_i = \frac{1 + (n + 1)}{10^{th} \text{ Data}}$$

- (d) Lastly, based on the decile value, determine the corresponding variable from amongst the population data.

4  
(1 mark  
for each  
correct  
step)

21. It is important to understand that digital information is the most vulnerable information that you may possess. With the increased amount and intensity of cyber-attacks, it is important for all of us to make sure that we discard the digital data in a proper way. This helps us to prevent unauthorized access to the data.

4  
(1 mark for  
correct need  
3 marks for  
correct ways –  
minimum three  
points to be  
mentioned)



Once you are done with the job and you no longer need the user data, you can go ahead and clean out the data from the memory.

Even while storing the data in your device, you can encrypt the data to make sure that even in case of data leak, hackers are not able to read your data. You can also format the computer drive/hard disk where the client confidential data was stored for a clean discarding. Please note that in most of the devices, if you do a soft delete of a particular file, this file deletes from the original space and gets stored in a temporary folder from wherev one can easily restore these files. Hence, it is important that confidential data is cleaned out or formatted from the disk permanently and no one is able to restore the files that we have deleted.